

ATTACHMENT 1

ATTACHMENT 1

Switching Input	HAI Source (Also Assumed to be FCC Model Source)
Switch Capacity Real-Time (BHCA) -- 1 through 4	HAI experience and expertise
Switch Capacity Traffic (BHCCS) -- 1 through 4	Selected to be consistent with BHCA limit assuming average holding time of 5 minutes
Processor Feature Loading Multiplier - normal	HAI estimate
Processor Feature Loading Multiplier - heavy business	HAI estimate
Processor Feature Loading Multiplier --	HAI estimate
Operator Traffic Fraction	HAI experience and expertise
Trunk Port, per end	AT&T Capacity Cost Study, AT&T judgment
Entrance Facility Distance, miles	HAI assumption
POPs per Tandem Location	HAI assumption
Local Business/Residence DEMs; Intrastate Business/Residence DEMs; Interstate Business/Residence DEMs	HAI estimate
Residential and Business Holding Time Multiplier	HAI estimate
ICO STP Investment, per line (equipment); ICO Local Tandem Investment, per line; ICO OS Tandem Investment, per line; ICO SCP Investment per line (equipment); ICO SCP - STP per line (wirecenter); ICO Local Tandem Investment, per line (wirecenter); ICO OS Tandem Investment, per line (wirecenter); ICO Tandem A Links and C Links per line (wirecenter)	HAI estimate
Real-time Limit, BHCA	HAI experience and expertise
Maximum Port Fill	HAI estimate
Common Equipment Intercept Factor	HAI expertise
STP Maximum Link Fill	HAI engineering judgment
Minimum STP Investment, per pair	HAI judgment
C Link Cross Section	HAI assumption
Fraction of BHCA requiring TCAP	HAI assumption
SCP Investment/Transaction/Second	HAI assumption
Operator Investment per position; Operator Maximum Utilization, per position, CCS; Operator Intervention Factor	HAI experience
Lot Size, Multiplier of Switch Room Size	HAI estimate
Switch Room Size, sq ft 1 and 2	HAI experience and expertise
Construction Investment, sq ft 1 through 5	HAI estimate

Switching Input

HAI Source (Also Assumed to be FCC Model Source)

Land Investment, sq ft 1 through 5	HAI estimate
OC-48 ADM, installed, 48 DS-3s and 12 DS-3s	HAI experience and expertise
OC-3/DS-1 Terminal Multiplexer, installed, 84 DS-1s	HAI experience and expertise
Investment per 7 DS-1s	HAI experience and expertise
Number of Fibers	Common practice and HAI engineering judgment
Pigtails, per strand	HAI estimate
Optical Distribution Panel	HAI estimate
EF&I, per hour and hours	HAI estimate
Regional Labor Adjustment Factor (see Labor Inputs)	Variety of sources
Channel Bank Investment, per 24 lines	HAI experience and expertise
Fraction of SA Lines Requiring Multiplexing	HAI approximation
Regenerator, installed	HAI approximation
Regenerator spacing, miles	HAI field experience
DCS installed, per DS-3	HAI experience and expertise
Transmission Terminal Fill (DS-0 level)	HAI judgment
Fiber Investment, fiber cable; buried fraction; buried sheath addition	HAI experts
Fiber Investment, buried placement; conduit placement	HAI judgment
Fiber Investment, conduit; spare tubes per route	Several suppliers
Fiber, pullbox spacing	Common practice
Fiber Investment, pullbox investment	Verbal information
Fiber, aerial fraction	Team of outside plant experts
Fiber, pole spacing, feet	Accounts for the mix of density zones applicable to interoffice Transmission facilities
Fiber Investment, pole material and pole labor (basic)	Several sources
Fraction Poles and Buried/Underground Placement Common with Feeder	Team of outside plant engineers
Threshold value for off-ring wire centers, total lines	HAI judgment
Remote-host fraction of interoffice traffic -- remote and host	HAI judgment
Maximum nodes per ring	Typical value
Ring transiting traffic factor	HAI judgment
Intertandem fraction of tandem trunks (additive)	HAI judgment
Switch line size - 1 through 4	Derived on basis of forced amalgam of host, remote & standalone switch investments
BOC remote per line inv - 2	Derived on basis of forced amalgam of host, remote & standalone Switch investments

ATTACHMENT 2

Date: Sun Jan 19, 1997 01:03 pm EST
 From: John C. Donovan / MCI ID: 215-2655

TO: * Dean Fassett / MCI ID: 215-5464
 CC: [REDACTED]
 CC: [REDACTED]
 CC: [REDACTED]
 CC: Dick Chandler / MCI ID: 439-0695
 CC: [REDACTED]
 CC: [REDACTED]
 CC: Robert Mercer / MCI ID: 437-8763
 CC: [REDACTED]

Subject: Surface Texture Conditions
 Message-Id: 31970119180513/0002152655PK52M

Dean,

At the FCC Joint Board hearings, it became obvious that even though surface texture and slope are unimportant factors compared to competitive bidding, ignoring such indicators doesn't sell well to the uninformed. Therefore, we are planning to incorporate this items in the Hatfield Model version 3.

Attached is an excerpt from BCM2 on surface texture indicators. '0' means that BCM ignores them as far as having any effect on trenching and plowing. '1' means that BCM applies a multiplier. I would propose continuing with the same 0 and 1 indications, unless you or a contact you make think otherwise. I have added 2 columns to the spreadsheet. One to indicate whether we believe the USGS indicator applies throughout the entire CBG, or whether only a portion of the CBG is likely to be effected. The other column is for an expert opinion as to the effect of the soil condition on the cost.

We need to lock this down ASAP. If you could make up some default numbers today, we could always change them before publishing the model.

John Donovan

Enclosures:

BINARY:SURFTEX.XLS saved in C:\MAILROOM\ENCLOSE\SURFTEX.XLS

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Surface Texture Table

Texture	Impact? 0 = No 1 = Yes	IIM	Description of Texture	% of CBG likely affected	Effect: e.g., 1.5 = 50% more	Remarks- discussions with Contractor on 1/19/97
	0		Blank	N/A	N/A	
BY	1	0	Bouldery	N/A	N/A	Most of the soil textures would
BY-COS	1	0	Bouldery Course Sand	N/A	N/A	not have an effect on large
BY-FSL	1	0	Bouldery & Fine Sandy Loam	N/A	N/A	volume job. Contractors simply
BY-L	1	0	Bouldery & Loam	N/A	N/A	would use larger equipment to
BY-LS	1	0	Bouldery & Sandy Loam	N/A	N/A	perform the work operation.
BY-SICL	1	0	Bouldery & Silty Clay Loam	N/A	N/A	Solid rock and swampy conditions
BY-SL	1	0	Bouldery & Sandy Loam	N/A	N/A	have more of an effect than any
BYV	1	1	Very Bouldery	10	1.1	other condition. Some soil textures
BYV-FSL	1	1	Very Bouldery & Fine Sandy Loam	10	1.1	will have an effect on trenching
BYV-L	1	1	Very bouldery & Loamy	10	1.1	and not effect plowing operations
BYV-LS	1	1	Very Bouldery & Loamy Sand	10	1.1	at all.
BYV-SIL	1	1	Very Bouldery & Silt	10	1.1	
BYV-SL	1	1	Very Bouldery & Sandy Loam	10	1.1	
BYX	1	1	Extremely Bouldery	15	1.3	
BYX-FSL	1	1	Extremely Bouldery & Fine Sandy Loam	15	1.3	Would effect trenching operations only
BYX-L	1	1	Extremely Bouldery & Loamy	15	1.3	Would effect trenching operations only
BYX-SIL	1	1	Extremely Bouldery & Silt Loam	15	1.3	Would effect trenching operations only
BYX-SL	1	1	Extremely Bouldery & Sandy Loam	15	1.3	Would effect trenching operations only
C	0	0	Clay	N/A	N/A	
CB	0	0	Cobbly	N/A	N/A	
CB-C	0	0	Cobbly & Clay	N/A	N/A	
CB-CL	0	0	Cobbly & Clay Loam	N/A	N/A	
CB-COSL	0	0	Cobbly & Coarse Sandy Loam	N/A	N/A	
CB-FS	0	1	Cobbly & Fine Sand	5	1.1	Would effect trenching operations only
CB-FSL	0	1	Cobbly & Fine Sandy Loam	5	1.1	Would effect trenching operations only
CB-L	0	0	Cobbly & Loamy	N/A	N/A	
CB-LCOS	0	0	Cobbly & Loamy CourseSand	N/A	N/A	
CB-LS	0	0	Cobbly & Loamy Sand	N/A	N/A	
CB-S	0	1	Cobbly & Sand	5	1.1	Would effect trenching operations only
CB-SCL	0	0	Cobbly & Sandy Clay Loam	N/A	N/A	
CB-SICL	0	0	Cobbly & Silty Clay Loam	N/A	N/A	
CB-SIL	0	0	Cobbly & Silt Loam	N/A	N/A	
CB-SL	1	1	Cobbly & Sandy Loam	5	1.1	Would effect trenching operations only
CDA	1	0	Angular Cobbly	NA	NA	

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CR	0	1	Cherty	10	1.2	limestone-would naturally depend on depth
CR-L	1	1	Cherty & Loam	10	1.2	
CR-SICL	1	1	Cherty & Silty Clay Loam	10	1.2	
CR-SIL	1	1	Cherty & Silty Loam	10	1.2	
CR-SL	1	1	Cherty & Sandy Loam	10	1.2	
CRC	1	1	Coarse Cherty	10	1.2	
CRV	1	1	Very Cherty	10	1.2	
CRV-L	1	1	Very Cherty & Loam	10	1.2	
CRV-SIL	1	1	Very Cherty & Silty Loam	10	1.2	
CRX	1	1	Extremely Cherty	10	1.3	
CRX-SIL	1	1	Extremely Cherty & Silty Loam	10	1.3	
DE	0	0	Diatomaceous Earth	N/A	N/A	
FB	0	0	Fibric Material	N/A	N/A	
FINE	0	0	Fine	N/A	N/A	Would effect trenching operations only
FL	0	0	Flaggy	N/A	N/A	
FL-FSL	0	1	Flaggy & Fine Sandy Loam	5	1.1	
FL-L	0	0	Flaggy & Loam	N/A	N/A	
FL-SIC	0	0	Flaggy & Silty Clay	N/A	N/A	
FL-SICL	0	0	Flaggy & Silty Clay Loam	N/A	N/A	
FL-SIL	0	0	Flaggy & Silty Loam	N/A	N/A	
FL-SL	0	0	Flaggy & Sandy Loam	N/A	N/A	
FLV	1	1	Very Flaggy	10	1.1	
FLV-COSL	1	1	Very Flaggy & Coarse Sandy Loam	10	1.1	
FLV-L	1	1	Very Flaggy & Loam	10	1.1	
FLV-SICL	1	1	Very Flaggy & Silty Clay Loam	10	1.1	
FLV-SL	1	1	Very Flaggy & Sandy Loam	10	1.1	
FLX	1	1	Extremely Flaggy	10	1.1	Would effect trenching operations only Would effect trenching operations only
FLX-L	1	1	Extremely Flaggy & Loamy	10	1.1	
FRAG	0	0	Fragmental Material	N/A	N/A	
FS	0	1	Fine Sand	15	1.1	
FSL	0	1	Fine Sandy Loam	15	1.1	
G	0	0	Gravel	N/A	N/A	
GR	0	0	Gravelly	N/A	N/A	
GR-C	0	0	Gravel & Clay	N/A	N/A	
GR-CL	0	0	Gravel & Clay Loam	N/A	N/A	
GR-COS	0	0	Gravel & Course Sand	N/A	N/A	
GR-COSL	0	0	Gravel & Coarse Sandy Loam	N/A	N/A	
GR-FS	0	0	Gravel & Fine Sand	N/A	N/A	
GR-FSL	0	0	Gravel & Fine Sandy Loam	N/A	N/A	
GR-L	0	0	Gravel & Loam	N/A	N/A	

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GR-LCOS	0	0	Gravel & Loamy Course Sand	N/A	N/A
GR-LFS	0	1	Gravel & Loamy Fine Sand	10	1.1
GR-LS	0	0	Gravel & Loamy Sand	N/A	N/A
GR-MUCK	0	0	Gravel & Muck	N/A	N/A
GR-S	0	0	Gravel & Sand	N/A	N/A
GR-SCL	0	0	Gravel & Sandy Clay Loam	N/A	N/A
GR-SIC	0	0	Gravel & Silty Clay	N/A	N/A
GR-SICL	0	0	Gravel & Silty Clay Loam	N/A	N/A
GR-SIL	0	0	Gravel & Silty Loam	N/A	N/A
GR-SL	0	0	Gravel & Sandy Loam	N/A	N/A
GR-VFSL	0	1	Gravel & Very Fine Sandy Loam	10	1.1
GRC	0	0	Course Gravelly	N/A	N/A
GRF	0	0	Fine Gravel	N/A	N/A
GRF-SIL	0	0	Fine Gravel Silty Loam	N/A	N/A
GRV	1	0	Very Gravelly	NA	NA
GRV-CL	1	0	Very gravelly & Clay Loam	NA	NA
GRV-COS	1	0	Very Gravelly & Course Sand	NA	NA
GRV-COSL	1	0	Very Gravelly & Course Sandy Loam	NA	NA
GRV-FSL	1	0	Very Gravelly & Fine Sandy Loam	NA	NA
GRV-L	1	0	Very Gravelly & Loam	NA	NA
GRV-LCOS	1	0	Very Gravelly & Loamy Course Sand	NA	NA
GRV-LS	1	0	Very Gravelly & Loamy Sand	NA	NA
GRV-S	1	0	Very Gravelly & Sand	NA	NA
GRV-SCL	1	0	Very Gravelly & Sandy Clay Loam	NA	NA
GRV-SICL	1	0	Very Gravelly & Silty Clay Loam	NA	NA
GRV-SIL	1	0	Very Gravelly & Silt	NA	NA
GRV-SL	1	0	Very Gravelly & Sandy Loam	NA	NA
GRV-VFS	1	0	Very Gravelly & Very Fine Sand	NA	NA
GRV-VFSL	1	0	Very Gravelly & Very Fine Sandy Loam	NA	NA
GRX	1	1	Extremely Gravelly	20	1.1
GRX-CL	1	1	Extremely Gravelly & Coarse Loam	20	1.1
GRX-COS	1	1	Extremely Gravelly & Coarse Sand	20	1.1
GRX-COSL	1	1	Extremely Gravelly & Coarse Sandy Loam	20	1.1
GRX-FSL	1	1	Extremely Gravelly & Fine Sand Loam	20	1.1
GRX-L	1	1	Extremely Gravelly & Loam	20	1.1
GRX-LCOS	1	1	Extremely Gravelly & Loamy Coarse	20	1.1
GRX-LS	1	1	Extremely Gravelly & Loamy Sand	20	1.1
GRX-S	1	1	Extremely Gravelly & Sand	20	1.1
GRX-SIL	1	1	Extremely Gravelly & Silty Loam	20	1.1
GRX-SL	1	1	Extremely Gravelly & Sandy Loam	20	1.1

Would effect trenching operations only

Would effect trenching operations only

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[illegible]

Rubbish - landfill environments - rare
Rubbish - landfill environments - rare

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SIIV	1	1	Very Shaly	10	1.5	
SIIV-CL	1	1	Very Shaly & Clay Loam	10	1.5	
SIIX	1	1	Extremely Shaly	10	2	
SI	0	0	Silt	N/A	N/A	
SIC	0	0	Silty Clay	N/A	N/A	
SICL	0	0	Silty Clay Loam	N/A	N/A	
SIL	0	0	Silt Loam	N/A	N/A	
SL	0	0	Sandy Loam	N/A	N/A	
SP	0	0	Sapric Material	N/A	N/A	
SR	0	0	Stratified	N/A	N/A	
ST	0	0	Stony	N/A	N/A	
ST-C	0	0	Stony & Clay	N/A	N/A	
ST-CL	0	0	Stony & Clay Loam	N/A	N/A	
ST-COSL	0	0	Stony & Course Sandy Loam	N/A	N/A	
ST-FSL	0	1	Stony & Fine Sandy Loam	10	1.1	Would effect trenching operations only
ST-L	0	0	Stony & Loamy	N/A	N/A	
ST-LCOS	0	0	Stony & Loamy Course Sand	N/A	N/A	
ST-LFS	0	1	Stony & Loamy Fine Sand	10	1.1	Would effect trenching operations only
ST-LS	0	0	Stony & Loamy Sand	N/A	N/A	
ST-SIC	0	0	Stony & Silty Clay	N/A	N/A	
ST-SICL	0	0	Stony & Silty Clay Loam	N/A	N/A	
ST-SIL	0	0	Stony & Silt Loam	N/A	N/A	
ST-SL	0	0	Stony & Sandy Loam	N/A	N/A	
ST-VFSL	0	1	Stony & Sandy Very Fine Silty Loam	10	1.1	Would effect trenching operations only
STV	1	1	Very Stony	10	1.2	
STV-C	1	1	Very Stony & Clay	10	1.2	
STV-CL	1	1	Very Stony & Clay Loam	10	1.2	
STV-FSL	1	1	Very Stony & Fine Sandy Loam	10	1.2	
STV-L	1	1	Very Stony & Loamy	10	1.2	
STV-LFS	1	1	Very Stony & Loamy Fine Sand	10	1.2	
STV-LS	1	1	Very Stony & Loamy Sand	10	1.2	
STV-MPT	1	1	Very Stony & Mucky Peat	10	1.2	
STV-MUCK	1	1	Very Stony & Muck	10	1.2	
STV-SICL	1	1	Very Stony & Silty Clay Loam	10	1.2	
STV-SIL	1	1	Very Stony & Silty Loam	10	1.2	
STV-SL	1	1	Very Stony & Sandy Loam	10	1.2	
STV,VFSL	1	1	Very Stony & Very Fine Sandy Loam	10	1.2	
STV-VFSL	1	1	Very Stony & Very Fine Sandy Loam	10	1.2	
STX	1	1	Extremely Stony	10	1.3	
STX-C	1	1	Extremely Stony & Clay	10	1.3	

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STX-CL	1	1	Extremely Stony & Clay Loam	10	1.3
STX-COS	1	1	Extremely Stony & Course Sand	10	1.3
STX-COSL	1	1	Extremely Stony & Course Sand Loam	10	1.3
STX-FSL	1	1	Extremely Stony & Fine Sandy Loam	10	1.3
STX-L	1	1	Extremely Stony & Loamy	10	1.3
STX-LCOS	1	1	Extremely Stony & Loamy Course Sand	10	1.3
STX-LS	1	1	Extremely Stony & Loamy Sand	10	1.3
STX-MUCK	1	1	Extremely Stony & Muck	10	1.3
STX-SIC	1	1	Extremely Stony & Silty Clay	10	1.3
STX-SICL	1	1	Extremely Stony & Silty Clay Loam	10	1.3
STX-SIL	1	1	Extremely Stony & Silty Loam	10	1.3
STX-SL	1	1	Extremely Stony & Sandy Loam	10	1.3
STX-VFSL	1	1	Extremely Stony & Very Fine Sandy Loam	10	1.3
SY	1	1	Slaty	5	3.0
SY-L	1	1	Slaty & Loam	5	3.0
SY-SIL	1	1	Slaty & Silty Loam	5	3.0
SYV	1	1	Very Slaty	5	3.5
SYX	1	1	Extremely Slaty	5	4.0
UNK	0	0	Unknown	N/A	N/A
UWB	1	1	Unweathered Bedrock	5	2.0
VAR	0	0	Variable	N/A	N/A
VFS	0	0	Very Fine Sand	N/A	N/A
VFSL	0	0	Very Fine Sandy loam	N/A	N/A
WB	1	1	Weathered Bedrock	5	3.0

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ATTACHMENT 3

ATTACHMENT 3

Cable Size	24 Gauge Underground Copper Cable				24 Gauge Buried Copper Cable				24 Gauge Aerial Copper Cable			
	Original NRRI Study with Engineering & Splicing Loadings*	FCC Modified NRRI Study w/ Huber Adj. & Engineering & Splicing Loadings**	FCC Modified NRRI Study w/ Huber Adj., Engineering and Splicing Loadings, and Superior Buying Adj.	FCC Proposed Input Values	Original NRRI Study with Engineering & Splicing Loadings*	FCC Modified NRRI Study w/ Huber Adj. & Engineering & Splicing Loadings**	FCC Modified NRRI Study w/ Huber Adj., Engineering and Splicing Loadings, and Superior Buying Adj.	FCC Proposed Input Values	Original NRRI Study with Engineering & Splicing Loadings*	FCC Modified NRRI Study w/ Huber Adj. & Engineering & Splicing Loadings**	FCC Modified NRRI Study w/ Huber Adj., Engineering and Splicing Loadings, and Superior Buying Adj.	FCC Proposed Input Values
(A)	(B)	(C)	(D)	(E)	(G)	(H)	(I)	(J)	(L)	(M)	(N)	(O)
4,200	\$57.42	(\$2.25)	(\$15.28)	\$39.32	\$65.16	\$83.80	\$71.21	\$46.25	\$52.25	\$49.82	\$42.43	\$42.43
3,600	\$49.85	\$8.68	(\$2.49)	\$33.70	\$56.28	\$71.96	\$61.17	\$39.78	\$45.03	\$42.88	\$36.54	\$36.54
3,000	\$42.28	\$16.17	\$6.87	\$28.09	\$47.41	\$60.13	\$51.14	\$33.31	\$37.81	\$35.93	\$30.66	\$30.66
2,400	\$34.71	\$20.23	\$12.79	\$22.47	\$38.53	\$48.29	\$41.10	\$26.84	\$30.59	\$28.99	\$24.77	\$24.77
2,100	\$30.93	\$20.97	\$14.46	\$19.66	\$34.09	\$42.38	\$36.08	\$23.60	\$26.98	\$25.52	\$21.83	\$21.83
1,800	\$27.15	\$20.85	\$15.27	\$19.10	\$29.65	\$36.46	\$31.06	\$20.37	\$23.37	\$22.05	\$18.88	\$18.88
1,200	\$19.58	\$18.03	\$14.30	\$16.02	\$20.77	\$24.63	\$21.03	\$13.90	\$16.15	\$15.11	\$13.00	\$13.00
900	\$15.79	\$15.33	\$12.54	\$13.51	\$16.34	\$18.71	\$16.01	\$10.66	\$12.54	\$11.63	\$10.05	\$10.05
600	\$12.01	\$11.77	\$9.91	\$10.35	\$11.90	\$12.79	\$10.99	\$7.43	\$8.93	\$8.16	\$7.11	\$7.11
400	\$9.48	\$8.92	\$7.68	\$7.88	\$8.94	\$8.85	\$7.65	\$5.27	\$6.53	\$5.85	\$5.15	\$5.15
300	\$8.22	\$7.35	\$6.42	\$6.53	\$7.46	\$6.87	\$5.97	\$4.19	\$5.32	\$4.69	\$4.16	\$4.16
200	\$6.96	\$5.68	\$5.06	\$5.11	\$5.98	\$4.90	\$4.30	\$3.11	\$4.12	\$3.54	\$3.18	\$3.18
100	\$5.70	\$3.92	\$3.61	\$3.63	\$4.50	\$2.93	\$2.63	\$2.03	\$2.92	\$2.38	\$2.20	\$2.20
50	\$5.07	\$3.01	\$2.85	\$2.86	\$3.76	\$1.94	\$1.79	\$1.49	\$2.31	\$1.80	\$1.71	\$1.71
25	\$4.75	\$2.54	\$2.46	\$2.46	\$3.39	\$1.45	\$1.37	\$1.22	\$2.01	\$1.51	\$1.47	\$1.47
18	\$4.67	\$2.41	\$2.35	\$2.35	\$3.29	\$1.31	\$1.26	\$1.15	\$1.93	\$1.43	\$1.40	\$1.40
12	\$4.59	\$2.30	\$2.26	\$2.26	\$3.20	\$1.19	\$1.16	\$1.08	\$1.86	\$1.36	\$1.34	\$1.34
6	\$4.51	\$2.18	\$2.16	\$2.16	\$3.11	\$1.07	\$1.06	\$1.02	\$1.79	\$1.29	\$1.28	\$1.28
1	\$4.45	\$2.09	\$2.08	\$2.06	\$3.03	\$0.97	\$0.97	\$0.97	\$1.73	\$1.23	\$1.23	\$1.23

* NRRI Study recommends a 15% engineering loading and 9.4% splicing loading for copper cable.

** FCC uses a 10% engineering loading and 9.4% splicing loading for copper cable.

ATTACHMENT 4

ATTACHMENT 4

